

REMARKS

Claims 1-44 are pending and at issue in this patent application. At the time of the Office action, claims 1-38 were pending in this patent application. Of these, claims 1 and 31 are independent. Claims 39-44 are added by this amendment. Applicant respectfully requests reconsideration and favorable action in this case.

Claim 1 is amended to recite, *inter alia*, determining an operator cognitive load and determining an operator assessment value as a function of the operator cognitive load.

Claims 25-28 are amended to be consistent with claim 1.

Claim 31 is amended to recite, *inter alia*, a response selector operable to determine an operator cognitive load based upon a master condition list and to assess operator performance based upon the operator cognitive load.

New claims 39-42 are added to recite that determining an operator cognitive load may include measuring driver stress, driver attention, and/or driver mental capacity. This is supported in the application specification at least at page 12.

New claims 43 and 44 are added to recite that operator performance incorporates a comparison between monitored driving behavior and known good driving behavior. This is supported in the application specification at least at pages 13-14.

Applicants respectfully traverse the rejection of claims 1-11, 13-18, 20-22, 29, and 30 as anticipated by Bouchard et al. (U.S. Patent No. 5,465,079) and respectfully traverse the rejection of claim 12 as obvious over Bouchard in view of Moore (U.S. Patent No. 6,370,454), the rejection of claim 19 as obvious over Bouchard in view of Burge (U.S. Publication No. US2002/0103622), the rejection of claims 23-24 as obvious over Bouchard in

view of Levine (U.S. Publication No. US2003/0014176), and the rejection of claims 25-28 as obvious over Bouchard in view of Graf et al. (U.S. Patent No. 5,390,117).

Each of claims 1-30 recites a method for assessing vehicle operator performance based, *inter alia*, on determination and assessment of an operator cognitive load. None of the cited references discloses or teaches assessing vehicle operator performance that incorporates consideration of operator cognitive load. Furthermore, because no combination of the cited references includes the element of assessing vehicle operator performance that incorporates consideration of operator cognitive load, no combination of the cited references can render any of the pending claims obvious.

While Bouchard discloses a method and an apparatus for evaluating a driver's performance based on various external and internal vehicle sensor readings, Bouchard does not disclose assessing vehicle operator performance that incorporates consideration of operator cognitive load. Bouchard only discloses taking various sensor readings in real-time and comparing them to recorded sensor readings in order to determine aberrations in driver performance, without determining the driver's cognitive capacity in relation to a particular task, including but not limited to maneuvering a vehicle in particular road situations, operating a vehicle's various onboard systems, and interacting with other passengers. Bouchard does not disclose that a driver's cognitive load can even be calculated, much less used to assess the driver's performance. Thus, Bouchard does not disclose the element of assessing vehicle operator performance based on an operator cognitive load.

Furthermore, Bouchard cannot render any of claims 1-30 obvious because Bouchard does not, in any manner, suggest that it would be desirable or even possible to calculate a cognitive load for any purpose. In fact, Bouchard does not recognize any problem associated with its system of evaluating driver performance based solely on a comparison of current

driver performance to past driver performance. By basing its evaluation on a driver's own past performance, the Bouchard system cannot immediately evaluate new driver performance. The Bouchard system must first collect some minimum amount of driver data in order to ascertain if a driver is off average. Moreover, because the Bouchard system segments its driving records by condition type (e.g., stopped, urban, suburban, or highway and time of day or trip length) , drivers that are predisposed to driving in a single condition and then suddenly changing to another condition may not be evaluated properly, if at all.

Furthermore, because the Bouchard system bases its evaluation on an average of past driving performance, the system will only report poor driving whenever a driver's current performance strays past an acceptable deviation from an average of that driver's past performance. This means that a driver that performs poorly in relation to a population's average driving proficiency will only be evaluated as a poor driver when that driver is driving extremely poorly. Moreover, because the system of Bouchard tracks only an individual's operating data in relation to past driving conditions, Bouchard cannot determine a driver's ability to perform tasks under different stress levels (as determined by population norms).

These deficiencies can be alleviated by calculating an operator's cognitive load and determining an operator's performance based on the operator cognitive load. Determining operator cognitive load may involve processing sensor readings in order to value the amount of driver stress, driver attention, or driver mental load for various tasks, including, but not limited to, maneuvering a vehicle in particular road situations, operating a vehicle's various onboard systems, and interacting with other passengers. Cognitive load calculations may be calibrated based on controlled experiments with a set of test subjects. Because this set of test subjects is not limited to a particular driver, a driver's performance may be evaluated not only against the driver's own performance, but also against a normal population. Various driving

situations may therefore be accounted for in advance, giving a more objective evaluation of the driver's ability to operate a vehicle. Moreover, using an operator cognitive load to determine driver performance can indicate the driver's ability to handle stress (as measured against population norms) while managing difficult driving maneuvers.

It is clear that the prior art must make a suggestion of or provide an incentive for a claimed combination of elements to establish a prima facie case of obviousness. See, *In re Oetiker*, 24 U.S.P.Q.2d 1443, 1446 (Fed. Cir. 1992); *Ex parte Clapp*, 227 U.S.P.Q. 972, 973 (Bd. Pat. App. 1985). This principle holds true even if the applied art could be modified to produce the invention recited by the pending claims. See, *In re Mills*, 16 U.S.P.Q.2d 1430, 1432 (Fed. Cir. 1990); *In re Gordon*, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984) ("The mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification.") Because Bouchard does not disclose or even suggest the desirability of calculating an operator cognitive load, much less using an operator cognitive load to determine operator performance, Bouchard cannot render any of claims 1-30 obvious.

As shown above, Bouchard cannot anticipate claims 1-30 or render claims 1-30 obvious because Bouchard does not disclose or suggest calculating an operator cognitive load or determining operator performance based on operator cognitive load. None of Moore, Burge, Levine, or Graf discloses or teaches calculating an operator cognitive load or determining operator performance based on operator cognitive load. Therefore, no combination of Bouchard, Moore, Burge, Levine, or Graf can render any of pending claims 1-30 obvious.

Applicants respectfully traverse the rejection of claims 31-35, 37, and 38, as obvious over Bouchard in view of Corrado et al., U.S. Patent No. 6,272,411 ("Corrado"), and

respectfully traverse the rejection of claim 36 as obvious over Bouchard in view of Corrado and Graf.

Each of claims 31-38 recite a response selector module that determines an operator cognitive load and a current operating condition and assesses operator performance based on the operator cognitive load and the current operating condition. None of Bouchard, Corrado, or Graf discloses or teaches using an operator cognitive load or assessing an operator action based on the operator cognitive load. Therefore, no combination of Bouchard, Corrado, or Graf can render pending claims 31-38 obvious.

While Corrado discloses a fused sensor module that combines two or more sensor readings in order to provide a more reliable representation of the position of a passenger in a vehicle, it does not disclose the calculation of an operator cognitive load. Corrado is primarily focused on determining the presence of passengers for the purposes of activating air bag controllers, not evaluating operator performance. Thus, Corrado does not disclose or suggest the need for an operator cognitive load.

As discussed above, neither Bouchard nor Graf disclose or suggest calculating operator cognitive load or assessing operator performance based on operator cognitive load. It follows therefore, that Corrado cannot render claims 31-38 obvious, alone or in combination with either Bouchard or Graf.

CONCLUSION

For at least the reasons set forth above, Applicants respectfully request reconsideration and allowance of rejected claims 1-44.

Although Applicants believe that no other fees are due, the Commissioner is hereby authorized to charge any fees or to credit any overpayments to Deposit Account No. 13-2855 of Marshall, Gerstein & Borun LLP. In addition, if a petition for an extension of time under 37 CFR 1.136(a) is necessary to maintain the pendency of this case and is not otherwise requested in this case, Applicants request that the Commissioner consider this paper to be a request for an appropriate extension of time and hereby authorize the Commissioner to charge the fee as set forth in 37 CFR 1.17(a) corresponding to the needed extension of time to Deposit Account No. No. 13-2855 of Marshall, Gerstein & Borun LLP.

If there are matters that can be discussed by telephone to further the prosecution of this application, Applicants respectfully request that the Examiner call its attorney at the number listed below.

Respectfully submitted,

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